Value Creation in Mobile Banking

Achraf Ayadi
Business Administration Department – MINT Lab.
GET/Institut National des Telecommunications
E-mail: achraf.ayadi@int-evry.fr

Abstract

The convergence of the Internet and mobile networks creates new opportunities and applications. Treating mobile business as simply an extension to the traditional web could result in missing out unique differentiated qualities for new value-added possibilities. Mobile Banking is considered to be one of the most value-added and important mobile service available. The current research examined technological changes in mobile networks and innovative attributes of Mobile Internet. It has advanced the theoretical framework of innovation in service to develop a customer centric analysis of mBanking value proposition. The article goes on to discuss critical factors in the diffusion of mBanking and explores reasons of failure and further prospects of success.

1. Introduction

The mobile communications market is changing dramatically and the next generation of customers will require more than vocal services. The technological and commercial convergence of mobile networks and Internet puts the telecom operators in front of new challenges and enormous opportunities [6]. Thus, in spite of the growth of user's number and the growing traffic on mobile networks, the rise of competition led to a strong fall in prices and margins. Differentiating products will be realized less on vocal communications than data exchanges [11]. The traditional income of telecom operators –initially based on relatively constant subscription fees– will yield more place to economic models based on Mobile Internet. Then, new incomes could emerge from subscriptions to services like data and contents, mCommerce[1], advertising and advanced networks services like Virtual Private Networks (VPN) and Quality of Service (QoS) guarantees. This modification of competition basis in the mobile market is accentuated by deep changes in consumer's behaviour: Internet caused a quick evolution of needs moving from social communication to electronic commerce. So, convergence of mobile communications and Internet requires a new analysis on the current model of value creation.

Mobile Banking (mBanking) is considered as one of the most important emerging services implying actors from different economic sectors in the mCommerce value chain [13][7][1]. "mBanking" consists in managing a bank account through a wireless Internet-enabled device.

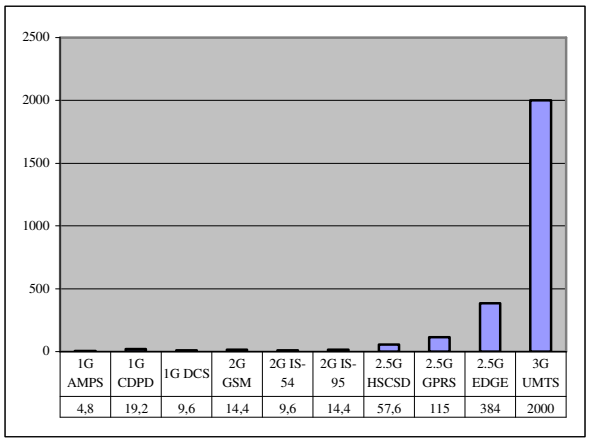
On the basis of the innovation diffusion theory in service sectors, we study the technological tendencies in the Mobile Internet. Then, we analyze the development factors of mobile services in the banking industry and their impact on the value chain. Finally, we conclude in term of strategic perspectives of Mobile Banking and its future evolutions.

[1] "mCommerce" is defined as any transaction with monetary value that is conducted via a mobile network [8]

2. Technological changes in mobile networks

Mobile technologies are shared between many standards. Indeed, the first generation of mobile networks (1G) was based on voice exchange via analogic radio frequencies. The second generation (2G) is fragmented between IS-54 and IS-95 US' standards and GSM (Global System for Mobile) which is the most expanded standard (50% of market share in the world [11]). However, the 2G standards in general suffer from low capacities in data transmission. Thus, they were quickly supplanted by standards known as 2.5G (HSCSD, GPRS and EDGE) which improve data transfer significantly. This step was accompanied by two forms of Mobile Internet: WAP and I-mode. The WAP (Wireless Application Protocol) is a protocol without licence which was very quickly adopted by telecom operators and equipment industry of mobile phones as the access bridge to Web pages throughout a mobile telephone. I-mode was launched in February 1999 by NTT DoCoMo which counts more than 36.7 million subscribers in Japan [2]. Its popularity is due to the similarity between development language I-mode, the C-HTML (Compact Hypertext Markup Language), and Internet's HTML. This resemblance makes possible for subscribers to have an easy access to Internet services and facilitates use of e-mail and access to thousands of Web pages. Today, NTT DoCoMo has several participations in mobile operators in Germany, in the United Kingdom and in France to settle in Europe where I-mode is emerging as a benchmarking standard. This intermediate stage of 2.5G standards allowed to the operators and various other actors in content creation to come near a dubious prospects market. The heavy investment in 3G licences for Universal Mobile Telecommunication System (UMTS) standard was then a brake for a Mobile Internet growth (Figure 1). UMTS networks boost data exchange flow to comparable levels known in traditional PC Internet connection. Also, the services considered as pioneers are expensive and focus on narrow niches customers. For example, mobile French operator "SFR" offers only one tariff formula: 349 euros for acquiring a wireless PC access card and a subscription of 75 euros per month for a 10 hours connection limited to a maximum of 500 Mo of data exchange volume.

Figure 1. Evolution of data exchange capabilities in mobile networks (in bps)



Admittedly, the tests carried out appear satisfactory including connection quality, but such offers are limited by a fundamental aspect: the difficulty to convince the broad market of millions of individual users by 3G services in a context where the compatible apparatuses with UMTS standard are rare and expensive. This technological context in transition affects the development of trade via mobile networks, delays access to rich multimedia contents and accentuates the interrogations around "the value proposition" to offer via Mobile Internet.

3. Innovation and value creation in Mobile Internet services

3.1. Innovation in services

In the literature, we identify three principal processes in carrying out innovation projects: decision process (innovation strategies), executing process (organizing innovation) and diffusion process

(confronting innovation and market)[14]. Rogers's innovation theory presented diffusion as a process of progressive communication between members of a social system [18]. Referring to an epidemiologic model, the propagation of an innovation depends on the number of adopters and the importance of their communication with the rest of the population. The perception of costs and advantages of the innovations by potential adopters determines this process of diffusion [14]. Thus, Rogers showed that this perception is closely related to intrinsic characteristics of innovation on the basis of which the product will be appreciated. Some authors define innovation by the existence of "creative attributes of value" [9]. In service innovation literature, innovation is considered as a customer-oriented value creation process. Then, concepts like "innovation" and "value proposition" are dependent, interrelated and inseparable in analysing and prospecting success factors in introducing a new product [9].

3.2. Value creation in Mobile Internet

"Value propositions define the relationship between supplier offerings and consumer purchases by identifying how the supplier fulfills the customer's needs across different customer roles" [8]. Thus, a purchasing behaviour via Mobile Internet is different from that via PC because the customer doesn't will to carry out a long navigation to search for a product or service. In mCommerce, customer is waiting for a personalized offer, targeted on products in immediate vicinity and accessible services beyond time and space. Estimations evaluate that every additional click on a mobile terminal reduce the probability of the transaction by 50% [8]. Four value propositions in mCommerce applications are identified: ubiquity, convenience, localization and personalization (see Table 1).

Many analyses focused on the diffusion process as the most important determinant of success in the adoption of Mobile Internet [5][7][11]. However, uncertainties about the prospective growth of mobile services in general, customer's response and time needed by 3G networks to replace 2G and 2.5G networks are very important [21]. These uncertainties are strongly related to technologies life cycle replacement and breaking technologies [14]. In fact, a performing technology can fail to replace another because of long time-to-market processes or the existence of a largely diffused and established old technology [20]. This failure can be related to cultural facts. Large differences are observed in the penetration rates of Mobile Internet in the world (72.3% in Japan, 59.1% in Korea against 16.5% in Finland and 5.6% in France [4]). The success of I-mode in Japan, for example, is related to particular socio-cultural factors which affect the interpersonal communication [12].

Table 1. Value proposition and applications in mCommerce

Suggested value		Applications
Ubiquity	Available products every where, every time	News, sports scores, stock prices, travel & weather info
Convenience	Eliminating PC connection constraints	Entertainment, gaming, retailing, banking, payments
Localization	Offer product & services depending on geographic localization	Dispatch, scheduling, discounting, emergency services, supply chain management
Personalization	Mobile phones are individual devices enabling one-to-one Marketing	Advertising, database development, knowledge management systems

Thus, with the growing implication of non-telecom actors in the innovation process, Mobile Internet value chain is changing dramatically [5][1][6][21]. In this context, the analysis of value proposition needs

to integer multiple value systems and different value chains. A recent study of Van de Kar and Van der Duin [21] showed that the only certainties around the future of Mobile Internet are only three: the mobile payments will profit from a large accessibility, mobile services will be "multimedia" and will tend to privilege the data exchanges as much as voice communication.

4. Developing mBanking: a customer centric value

4.1. Confronting customer needs and mBanking applications

Pousttchi and Schurig [16] identify four use cases of mBanking: request of account balance, control of account movements, instant payment and account administration. These use cases corresponds to specific customer needs and depends as well on the wireless device available as on the telecommunication network performance. We can distinguish between two principal applications for the mBanking:

- **SMS-Banking**: Short Message Service is particularly adapted to 2G networks because they require low capabilities for data exchange (160 characters for 7 bit by message). For example, SMS make possible to answer quickly a customer request to consult the account balance. The sensitivity of this information requires that the bank lodges and manages its own SMS server since the telecom operators are not authorized to treat them. In the United Kingdom, First Direct attracted 138.000 subscribers with its "SMS alerts" which represented 25% of its online customers [19]. "The main problem with this kind of transmission is the missing encryption of the data during the on-the-air transmission between the service center and the mobile phone" [16]. Thus, banks are just satisfied to deliver a limited information service to customers; but, it is impossible to carry out SMS-based transactions.

- **WAP-Banking**: Wireless Application Protocol offer an access to micro-websites managed by a bank's server. Customer access process looks like via Internet. Also, transactions safety via WAP is guaranteed by Internet cryptography systems. The customer authentification is made via his PIN code (Personal Identification Number) and the transaction authorisation is given by a customer validation (TAN: Number Transaction). WAP-Banking experience is considered as a failure for multiple reasons [19]: the WAP requires 30-40 seconds of connection login, an important number of "clicks" before accessing to useful information or carrying out a full transaction.

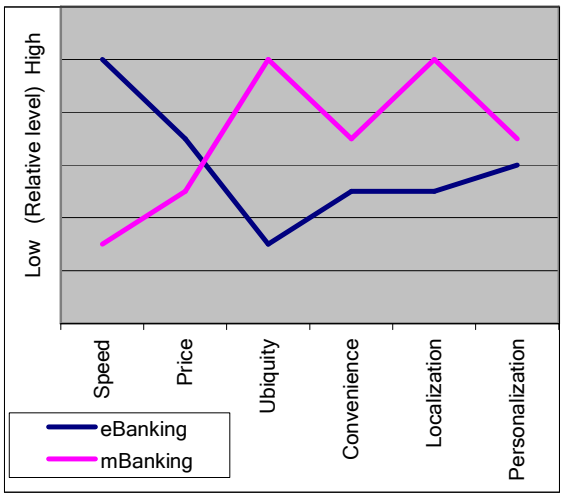
Admittedly, several financial institutions like Nordea, Sampo-Leonia, SEB, Egg and Credit Suisse exploited the WAP experience to test the market and to develop a broad pallet of functionalities [17]. Waiting for a generalization of 3G networks that allow new technical possibilities in term of flow capabilities and content richness, the current availabilities are too much limited, unsecured and unstable for banks [13]. The fast development of technologies and announcement of new powerful applications cause the prudence of bank's leaders and increase uncertainties around the future of mBanking [16]. The Key element for choosing the better moment of adoption (by banks) and the opportunity to invest in mBanking is to anticipate value proposition awaited by customers.

4.2. Value proposition as developing factor of mBanking

In the banking industry, distant channels of distribution are increasing (ATM, Internet, mobile phones, PDA, etc.) but they don't seem to meet the same needs. Every channel offers different value creation opportunities to customers.

For example, there are very strong differences between Internet via PC and via mobile. The mBanking, compared with the Internet Banking (eBanking), requires more personalization because the profile of the customer and his localization are easily detectable. However, it is necessary to establish a fast access to information since the customer is not interested by a long navigation via his mobile phone [17][8][19]. Figure 2 offers a comparison of the plausible value curves for eBanking and mBanking [8].

Figure 2. Comparative value curves for eBanking and mBanking



Internet and Internet-enabled wireless devices could function as complementary channels of distribution [17]. They probably direct to the same customer, but they do not direct to the same needs. Thus, it seems natural that a successful bank as Barclays (United Kingdom) which has 1.9 million of eBanking customers invests in developing mobile channels of distribution [19]. The adoption factors of mBanking development are not only related to the commercial client relationship. Many actors affect the value chain of mCommerce whose diffusion depends on their coordination and consensus around common technological standards and their commitment in a coordinated step of market preparation [15].

5. Conclusions

The potential of mobile phones to create new types of value is very important in banking services. However, the current penetration of mBanking remains very mitigated. An investigation of Benchmark group realized with 1187 Net surfers (95% of them use eBanking) showed that 65% do not use mBanking and 35% are not satisfied by offered services [4]. Also, Wells Fargo, one of the first banks having set up an eBanking service in the world intends to stop its mBanking services after that only 2500 customers subscribed to them in one year [4]. This relative failure is quasi unanimous in the literature [17][19][13][16] but the majority of the contributors underline the still unexplored potential of mBanking. In fact, uncertainties affect specific relational and technological factors to the mCommerce market [15]. Thus, many actions remain to be done for the development of electronic payment standard that profit from large acceptation between value chain actors. Payment security, for example, is one of the major uncertainties in mCommerce because of the keen competition carried out by the US-UE consortium "PayCircle", Hewlett Packard, Lucent Technologies, Oracle, Sun Microsystems and Siemens [19]. Harmonisation of security standards is underlined by many studies as being an accelerator element of mBanking adoption and diffusion [13].

However, some interesting initiatives are emerging to federate technological visions and to reorganise competition in a “win-win” global approach. It’s the case of the "Mobey Forum", a think tank founded in May 2000 by leading financial institutions and actors of telecom industry and joined by technology operators and consultants (20 members). In a recent study, this group underlines the importance of several factors in promoting a true market of financial services at the international level: develop compatible and interoperable standards to keep an open market for

customers and actors, guarantees the independence between actors and standards to let customers choose the best combination "operator-financial institutions" and, integrate already existing technologies into the new platforms and standards under development to avoid reinvesting more money and time -especially for banks- to install new electronic channels of distribution [15].

The challenge which remain open for all actors is to build adapted products and services with customer needs, to shorten the time-to-market of new technologies and to guarantee that the access cost wouldn't be perceived by the market as a barrier to entry.

6. References

[1] Barnes S.J. (2002), "The mobile commerce value chain: analysis and future developments", *International Journal of Information Management*, Vol.22

[2] Benchmark Group (2002), "Japon: le marché de l'Internet mobile", www.journaldunet.com

[3] Benchmark Group (2003a), "Monde: marché de l'Internet mobile", www.journaldunet.com

[4] Benchmark Group (2003b), "Les internautes et leur banque : services mobiles, mention passable", www.journaldunet.com

[5] Booz Allen & Hamilton (2000), "The wireless internet revolution", *Insights*, Vol.6 (2)

[6] Buellingen F. & Woerter M. (2004), "Development perspectives, firm strategies and applications in mobile commerce", *Journal of Business Research*, en publication

[7] Celent Communications (2002), *Open Finance in the US and Europe: a perfect storm in retail Banking*, June

[8] Clarke I. III (2001), "Emerging value propositions for m-commerce", *Journal of Business Strategies*, Vol.18(2)

[9] Flipo J.P. (2000), *L'innovation dans les activités de service*, Ed. d'Organisation

[10] Gallouj F. (1998), "Innovating in reverse: services and the reverse product cycle", *European Journal of Innovation Management*, 1(3), pp. 123-138

[11] IDATE (2003), *Le marché mondial des services mobiles*

[12] Ishii K. (2004), "Internet use via mobile phone in Japan", *Telecommunications Policy*, Vol.28

[13] Lee M.S.Y., McGoldrick P.J., Keeling K.A. & Doherty J. (2003), "Using ZMET to explore barriers to the adoption of 3G mobile banking services", *International Journal of Retail & Distribution Management*, Vol. 31(6)

[14] Loilier T. & Tellier A. (1999), *Gestion de l'innovation*, Ed. Management & Société

[15] MobeyForum (2003), *MobeyForum Mobile Financial Services*, http://www.mobeyforum.org

[16] Pousttchi K. & Schurig M. (2004), "Assessment of today's Mobile Banking applications from the view of customer requirements", *Proceedings 37th Hawaii ICSS*

[17] Research and Markets (2001), *Banking on wireless- European banks blaze the mBanking trail*, http://www.researchandmarkets.com

[18] Rogers E.M.(1983), *Diffusion of Innovations*, New York, Free Press, 3éme edition

[19] Sangani K. (2002), "Mobile banking", *Financial World*, March

[20] Shapiro C. & Varian H.R. (1999), *Economie de l'information: guide stratégique de l'économie des réseaux*, Ed. De Boek Université

[21] Van de Kar E. & Van der Duin P. (2004), "Dealing with uncertainties in building scenarios for the development of mobile services", *Proceedings 37th Hawaii ICSS*